ST LAKE SUBMARINE CRUISER WILL BE A MARVEL F MECHANICAL INGENUITY AND DESTRUCTIVENESS

Invention, "Turned Down" by United States , Gains Remarkable Victory Over Competi= ors in Fair Contest in Foreign Waters.

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A trip aboard one of the little submarines gives one a new conception of man's ingenuity and of his ability to overcome what ordinarily would seem insuperable obstacles. The little craft lying on the bottom of a dry dock seems little larger than a hogshead and its main compartment only a few times longer. Yet there are the engines, the living-room, with bunks for ten men, the culinary arrangements, the storage batteries which furnish power for the electric plant, the lavatory and all of the conveniences and luxuries necessary to make life under water as pleasant as possible.

In the forward end is found one of the most marvelous features of the craft—the diving chamber. Here by the introduction of compressed air, it is possible to open up a sea door at the bottom of the submarine and one may step through this aperture out upon the bed of the ocean. The compressed air, of course, keeps the water out of the chamber—simple as A, B, C.—such things always are after some long-headed man has spent years in figuring them out.

Better and More Powerful.

The new submarine at the shipyard here, which soon will be ready for tests, is an advance over the "Protector" and the "Simon Lake X" boats, being longer and larger and having torpedo tubes which will carry the long Whitehead torpedo—the most powerful and destructive implement of destruction known in modern naval warfare. It also has separate quarters for the officers and ample sleeping quarters for the crew.

On March 17, the Army and Navy Journal, in connection with the dispatch from St. Petersburg announcing the triumph of the Lake boat in the competitive tests at Libau, printed the following report made by a subdirector of the Norwegian Navy Department to his government:

Opinion of an Expert.

"The boat was easily kept on an even keel the whole of the time and without great variation at the depth desired. That the crew freely moved about the boat did not seem to exercise any noticeable influence on the trim of the boat. As an example with what facility the boat was steered in the vertical plane can be mentioned that Captain Lake, who managed the hydroplanes and the horizontal rudder, once left these for awhile and went down to put something to rights in the boat.

Worked by Inexperienced Men.

"As was said, there were only two men, Captain Lake and one of the crew, that had practiced in the handling of the submarine boat. The rest of the crew consisted of mechanics from the dock yard. The submergences and emergences were therefore practiced with great facility and speed. As an example of the stability of the boat in fore and aft direction, the following experiment was given: The boat was laid quiet with only the top of the lighting instrument above the surface of the water, three men weighing 500 pounds then went from stem to the stern, a distance of forty feet, and thereby caused a change in the direction of the fore and aft shaft of 2 per cent. After having run for awhile under the water and also along the sea bottom, as mentioned before, we rose to the surface and the passengers embarked on a steam launch from where Captain Lake was observed making various trial maneuvers, with submerging and emerging and propulsion with the decks on a level with the surface of the water. The boat made these maneuvers with speed and precision and especially was it observed that the boat was kept remarkably horizontal the whole time.

"Once, at Hampton Roads, the boat was submerged to the sea bottom when running forward, so that she rested on her wheels. During this no blow was observed.

Propulsion on Sea Bottom.

"The electric motors were then put into forward motion and the boat rolled along the sea bottom, which, as far as could be understood, she slightly touched with the foremost wheel; it could be seen that a tiller, which is in connection with the hydraulic plunger which regulates the position of the roller, went up and down after the unevenness of the sea bottom. Also when the boat was be[illegible] was driven on her wheels the boat one could not

ing nor hear any sound, so that the sea bottom was probably very smooth, most likely of sand. Another advantage of the wheels is that with the use of them one can navigate in such shallow waters, which would be impassable for other submarine boats. Trials were made with dropping the anchor down to the sea bottom and hauling the boat down to them. This was practicable without difficulty. The engines and motors acted with great satisfaction unde all trials made. I am on the whole under the impression that these machines can be managed quite as easily as steam engines of similar size. The big air compressing pump acted very well under the trials made. Machine, pumps, and other apparatus worked excellently under the whole trials without failing, and it should be specially noticed that under propulsion with the gasoline engines one did not observe any smell of gasoline inside the boat. There are no ventilation fans. As long as the craft runs with the gasoline engines the air is sucked in with such speed that it is continuously renewed. It is, therefore, only when under propulsion under water with electric motor that no change of air takes place. Under these circumstances one can, if necessary, procure fresh air by letting the air compressing pump pump air from the inner part of the boat outside her and replace new air from low pressure accumulators. The temperature in the boat was kept at a comfortable degree, however, it was cold weather—ice was floating here and there; in summer, it may be, it will be hot. Trials were made with the diving chamber with the fittings belonging thereto. These proved to work to full satisfaction."

Perhaps the best summary of the claims of the Lake Torpedo Boat for consideration at the hands of the United States government may be found in the following appeal from Mr. J. C. Lake, vice president of the Lake Torpedo Boat Company and father of the inventor, presented to the Naval Affairs Committee of the House of Representatives at a recent hearing on the Gardiner bill to appropriate money to purchase a Lake submarine, after it has undergone certain specified tests:

March 24, 1906.

I take this means of addressing your Honorable Committee in behalf of The Lake Torpedo Boat Company in connection with House Bill No. 17,226, presented for the favorite consideration of Congress and now before your Committee. I desire first to consider briefly the question of "The Relation of Submarines to Battleships," which will give you a general thorough condensed, resume of the present status of submarines in the United States and abroad.

Could the United States submarine boats attack hostile battle-ships while the battle-ships were at sea within gun range of our coast cities?

Could hostile battle-ships get within gun range of our coast cities and yet be beyond the United States submarine's sea radius of action?

If a United States submarine boat cannot safely submerge in waters over 8 fathoms deep and a battleship could bombard American coast cities from ten to twelve miles at sea while in deep water, what protection would such submarines be, in case of war?

What good is a submarine boat so dangerous to its crew, that it must not be operated even in shoal waters without an attending surface derrick must not operate at all (even with a derrick) in waters over eight fathoms of depth?

Are millions of dollars being wasted by the United States Government in its purchase of a discredited and antiquated type of submarine boat, of no practical value, as well as being dangerous to navigate?

These questions and many others are suggested, and the answers are indicated, derogatory to the United States Submarines, by the recommendation of the Navy Department.

"That the United States Submarines must not be submerged in waters of over eight fathoms in depth and shall be accompanied by a surface attending [illegible] was provided to raise them in case they fail to return to the surface."

Such an operation as to raise a helpless submarine to the surface by means of a surface derrick cannot be accomplished, without first locating the submarine, which experienced wreckers know, is a very difficult undertaking, sometimes taking weeks to accomplish; and even when located they must have the aid of divers to make the necessary connections to the sunken vessel. This requires time that might be fatal to the imprisoned crew, even in inland waters, and which would be impossible nine times out of ten in the open sea where a submarine must operate in time of war to be of any practical use.

Thus an attending surface derrick does not afford the diving submarine adequate safety either in peace or war. A surface attending derrick for a submarine boat has been characterized as a huge joke.

Why this peculiar derrick suggestion? Because these diving submarines are dangerous to their crews for the reason that they are prone to dive at an unexpected moment with fatal results even while running on the surface with their hatches open, owing to their insufficient fore and aft stability, as in the disaster to the English diving submarine, on June 8th, 1905, (a striking example), all but two of the crew having lost their lives in that accidental dive, and the two saved were on the outside of the coming tower when she so unexpectedly dove.

They are also dangerous to crew in diving in unlimited depths of water (or greaten than eight fathoms) as they are apt to get beyond control of the crew and plunge to depths which would crush the boat or cause such severe leakage that the pumps would be unable to control same, thus quickly destroying their slight reserve buoyancy and rendering it impossible for them to return to the surface, as in the case of the United States submarine Porpoise when she placed her crew in peril of their lives by an uncontrolled dive, which carried her to the bottom and would have proved fatal had the waters been but a few feet deeper.

Thus the wisdom and humanity of the Secretary of the Navy in issuing the derrick precaution is apparent.

Then why spend more money on this same type of boat? Why is it not time to try another type that can and does operate in waters of any depth without an attending surface derrick or convoy?

Accidents have been numerous on the diving type of submarines and the list of fatalities is large. Disasters have been frequent abroad and innumerable narrow escapes have been recorded in this country.

Among the disasters to the diving type of submarines abroad (which are of the same type as the United States Submarines), those of the English "A1," "A5," "A8," are notable, many lives having been sacrificed on those vessels.

Crews of diving submarines are restricted in their movements to certain specified and confining limits, which is fatiguing and demoralizing to their nervous senses.

It is not so long ago that a crew of United States sailors refused to submerge in a Government diving submarine at San Francisco, considering it too great a risk of their lives.

Did these men display good judgement? Were they courtmartialed for insubordination?

The diving submarines have been tried and found wanting in so many important particulars in innumerable accidents, that the assertion of their utter impracticability cannot be successfully disproved. The very action of the Secretary of the Navy concerning the derricks tells its own story.

Rear-Admiral Coghlan, U. S. N., Commandant of the Brooklyn Navy Yard, characterizes the Government submarine boats as practically useless. In a public address he is reported in the New York press to have said:

"Three submarine boats came to the Navy Yard last spring for repairs. Heaven only knows when they will get away. As soon as you repair one end of the craft, the other end needs rebuilding. The insides have been wholly rebuilt, and the only thing I can see to do with them is to build new hulls. I should object to doing that, however, when the subject comes up for consideration. I prefer to let them sink where they are."

Thus the advocates of the diving submarines may denude the United States Treasury in trying to bolster this false theory of the diving type, but they will never be able to make such a craft a reliable, every-day, workable submarine boat at sea, even with the aid of a "surface attending derrick."

The diving submarines are rarely, if ever, seen without aconvoy and are usually towed from port to port, even then with serious results in several cases, as with the "Adder," "Moccasin" and "Plunger," which entailed thousands of dollars for salvage and repairs.

Therefore, whether or not submarine boats are useful weapons of war is yet to be determined in the United States, but in view of the fact that other countries are building them, and the more the subject is investigated abroad, the greater appears the possibilities of such craft of a certain type, the best interest of the United States demands the speedy determination of the question, in order to secure the best type for its own use and thus keep at least abreast of other nations in submarine matters.

Extracts from an article by Lieut. J. H. Tomb, U. S. N., in "Proceedings of the Naval Institute," December, 1905, follow:

"There are two main types of submarines, the diving type as typified by the Holland boat and the even-keel type as the Lake boat. * * *It is by competition that the greatest progress is made. * * * If we had one of the Lake boats on the East coast and one on the West coast to compete against the Holland boats, I am confident that our Submarine Navy would soon rank among the first in the world, instead of holding the fifth or sixth place as it bids fair to do * * * The main features of the even-keel type are superior to the diving type, and seeing this, it is nescessary for our Navy to develop that type if it wishes to have an efficient and capable Submarine Navy in the future."

The United States could and should have been first today.

This Government now has eight submarine boats of the diving type—which are not satisfactory (as disclosed by the derrick episode) and even if they were, a more satisfactory one should be accepted. It is reasonable and proper that the United States should now try the other type—the Lake even-keel—now being offered to the United States without a dollar's risk to the latter.

Attention is directed to the fact that the sale of the "Protector" and five more boats of the Lake type to a foreign government was made upon conditions of guaranteed qualifications and performances similar to those now being offered the United States by The Lake Torpedo Boat Company, and the said Government subjected them to rigid trials including:

Submergence to a depth of 137 1-2 Feet.

The Entering of a Harbor From the Open Sea in Broad Daylight Undiscovered.

A Run of 560 Miles Under Their Own Power in a Rough Sea.

Firing Torpedoes and Proving Their Ability for Cutting and Clearing Mines, Etc.

After these performances they were accepted and paid for; and it is a significant fact that out of all the other submarine boats of six different types, including German, Russian, French and American, subjected to competitive trials by said Government and in the face of the keen competition of every submarine boat builder in Europe and America, The Lake Torpedo Boat Company was the only one that received additional orders for its boats, and after the said Government had tried out practically every prominent type of submarine boat known, including the very boat "Fulton," which The Lake Torpedo Boat Company had tried (in vain) for two years to get into competition with in the United States.

Naturally, The Lake Torpedo Boat Company feels proud of this international achievement over all competitors, and thus making sales and securing contracts aggregating several millions of dollars.

Yet, the pride of many mericans is hurt and their feelings stung by the fact that Simon Lake, whom they believe to be the inventor of the only reliable, safe, practical and working submarine boat with fighting efficiency in any sea, in any part of the world, could not have had opportunity to achieve this international victory in his native land, which he has been striving for both faithfully and honorably for these many years.

Congress enacted a law for 1904 and 1905 providing that "Any American inventor may have his, her or its subsurface or submarine torpedo boat tested by comparison or competition or both with a Government subsurface or submarine torpedo boat, or any private competitor, provided there be any such" Prior to the awarding of contracts for submarine boats.

The Lake Torpedo Boat Company has, at its own expense, presented two practical submarine boats, the "Protector" and "Simon Lake X," and demanded competition with a U. S. A. Holland submarine, under said Acts of Congress, but competition was withheld and an effort made to compel The Lake Torpedo Boat Company to accept comparison instead, which it declined to accept, contending that said Act plainly provided that it could have competition in like conditions of sea and weather as plainly intended by Congress, after debate, and decisive vote upon every question of competition.

The Lake Torpedo Boat Company is now in a position to offer for sale to the United States Government a third boat, providing an apropriation is made available for its purchase.

The Lake even-keel submarine boat represents the most practical development in the submarine art, as demonstrated by actual performances which have never been attained by any other type of submarine boat in the World and which no crew of a diving submarine dares attempt; many lives having been lost in the diving submarines in attempting very much less.

The trials as stipulated in the bill include essential and indispensible requisites of a practical, efficient, and reliable seagoing submarine boat.

There are but two distinct types of submarines—the diving and the even-keel—which are sometimes called submarine and submersible.

The diving type, the principles of which require its stability to be reduced almost to the vanishing point to enable it to dive readily in response to its horizontal stern rudder (thereby departing from every principle of surface navigation as to fore and aft stability) has already been discredited by a number of foreign powers and the even-keel type is being substituted as fast as practicable. This statement will be applicable to the United States after the Lake even-keel boat has been tried.

Attention is called to the fact that reduction in fore and aft stability of a submarine boat produces a reduction in tranverse stability when submerged. This is an added source of danger to the diving submarines, as the presence of water within the boat may cause it to suddenly capsize. The capsizing of the English "A8 was doubtless, due to this cause.

The Lake Even-Keel Type in retaining the usual fore and aft stability maintains a condition similar to all surface boats, which makes them proof against accidental diving when running on the surface, and when descending, below the surface, allows the depth of submergence to be regulated within safe limits even in the deepest of waters.

The "Lake" disappears under the surface on an even-keel and under absolute control of crew and is devoid of that dangerous plunging propensity and erratic action which is characteristic of the diving type, such erratic action combined with the small amount of fore and aft stability, makes rapid and accurate torpedo firing in diving submarines an impossibility, owing to the fact that the torpedo tube cannot be reloaded while running submerged without producing considerable changes of trim, causing the dangerous dive or a return to the surface at an inopportune moment.

Before her sale abroad, the Lake even-keel submarine "Protector" frequently made long runs in Long Island Sound, twice running from Bridgeport, Conn., to Newport, R. I., and back, with two boats in tow, under her own power and unconvoyed, encountering a heavy gale in the open sea. Her feats of submergence at Newport and Oyster Bay, were performed at various times, with many Naval Officials and others on board; meals were cooked and served to them while submerged. They proclaimed her to be the superior of any submarine they had ever seen, and included in the parties were commanding officers of diving submarines in the United States Navy.

The United States Army Board, whose officers went to Newport R. I., to inspect the "Protector," (having previously inspected the diving type and finding the latter type not adapted to its needs) reported the Lake boat "Protector" to be "The Nearest Approach to Absolute Protection Known," for harbor and coast defense work, and recommended the purchase of five (5) Lake Submarines, and designated the points where they should be used.

Do these facts indicate that it is good policy for the United States Government to continue to provide for the construction of unsatisfactory submarines, when a type greatly superior is available?

A comparison of the two types will satisfy any fair minded person of the superiority of the Lake even-keel boat over all others, and without variance naval officers here and abroad who have inspected the Lake boats so concluded.

The wisdom of the United States Goernment in having the best submarine boat, may prevent a foreign war, which would cost this Govern-

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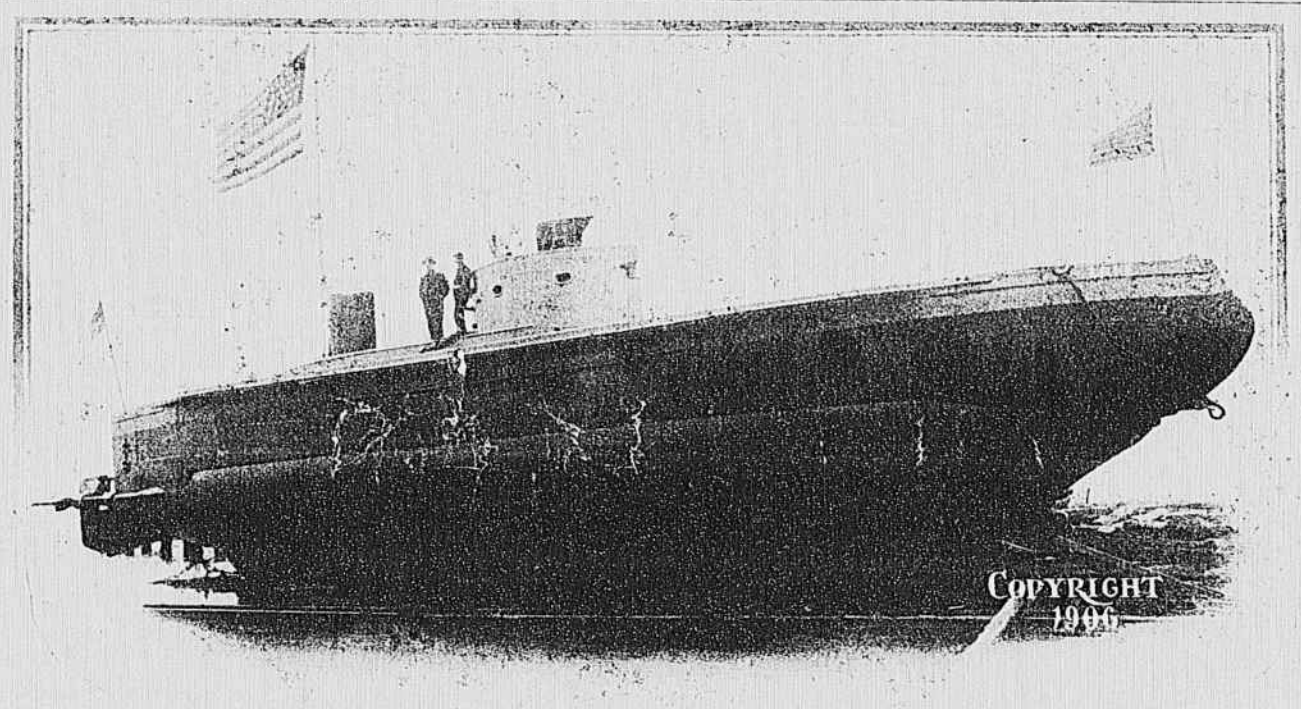

Latest Lake Submarine, on Ways at Shipyard.